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(54) **VARIABLE FOCUS OPHTHALMIC DEVICE**

(71) Applicant: **Johnson & Johnson Vision Care, Inc.**, Jacksonville, FL (US)

(72) Inventors: **Randall B. Pugh**, Jacksonville, FL (US); **Daniel B. Otts**, Fruit Cove, FL (US); **Frederick A. Flitsch**, New Windsor, NY (US)

(73) Assignee: **Johnson & Johnson Vision Care, Inc.**, Jacksonville, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,873,029 A 10/1989 Blum et al.
5,171,266 A 12/1992 Wiley

(Continued)

FOREIGN PATENT DOCUMENTS

CN 1675575 A 8/2005
EP 1818692 A2 8/2007

(Continued)

OTHER PUBLICATIONS

PCT International Search Report, dated Jan. 21, 2010, for PCT Int'l. Appln. No. PCT/US2009/058589.

Primary Examiner — Yogendra Gupta
Assistant Examiner — Emmanuel S Luk

(57) **ABSTRACT**

This invention discloses methods and apparatus for providing a variable optic insert into an ophthalmic lens. An energy source is capable of powering the variable optic insert included within the ophthalmic lens. In some embodiments, an ophthalmic lens is cast molded from a silicone hydrogel.

15 Claims, 8 Drawing Sheets